

SN engineer expands solar technology

As the golden rays of the sun hit the roof of Western's Folsom office building, they do more than bounce into the atmosphere or sink into the building's interior—they create energy for some of the facility's electrical needs.

Transformed by photovoltaics or, as they are more commonly known, solar panels, sunshine is becoming power through the efforts of **Bob Parkins**, an engineer who serves as Folsom's Energy Services manager. Having already placed eight kilowatts of PV panels on the office roof, Parkins said the three-phase project—now in phase one—will mean a significant 36 kW increase in PV-generated power in the next two years.

Each phase will generate power using a different PV technology and will help educate the public and Western's customers about the pro-

ject.

In addition to the panels at the Folsom office, SN Region has installed 78 kW of building-integrated PV panels on the roof of its Elverta facility.

"The Elverta project is the largest facility of its kind in the continental United States and a one-of-a-kind project for Western," Parkins said. "We are an early leader within DOE and the Federal government in using photovoltaic panels on our buildings."

The panels already are proving to be cost-effective. In addition to generating electricity, the panels protect the roof surface, extending its life and provide insulation to reduce cooling costs. Electric production by the panels peaks at the same time as electric usage for air conditioning. Parkins estimates the Elverta PV panels generate enough power to offset the peak load of the building.

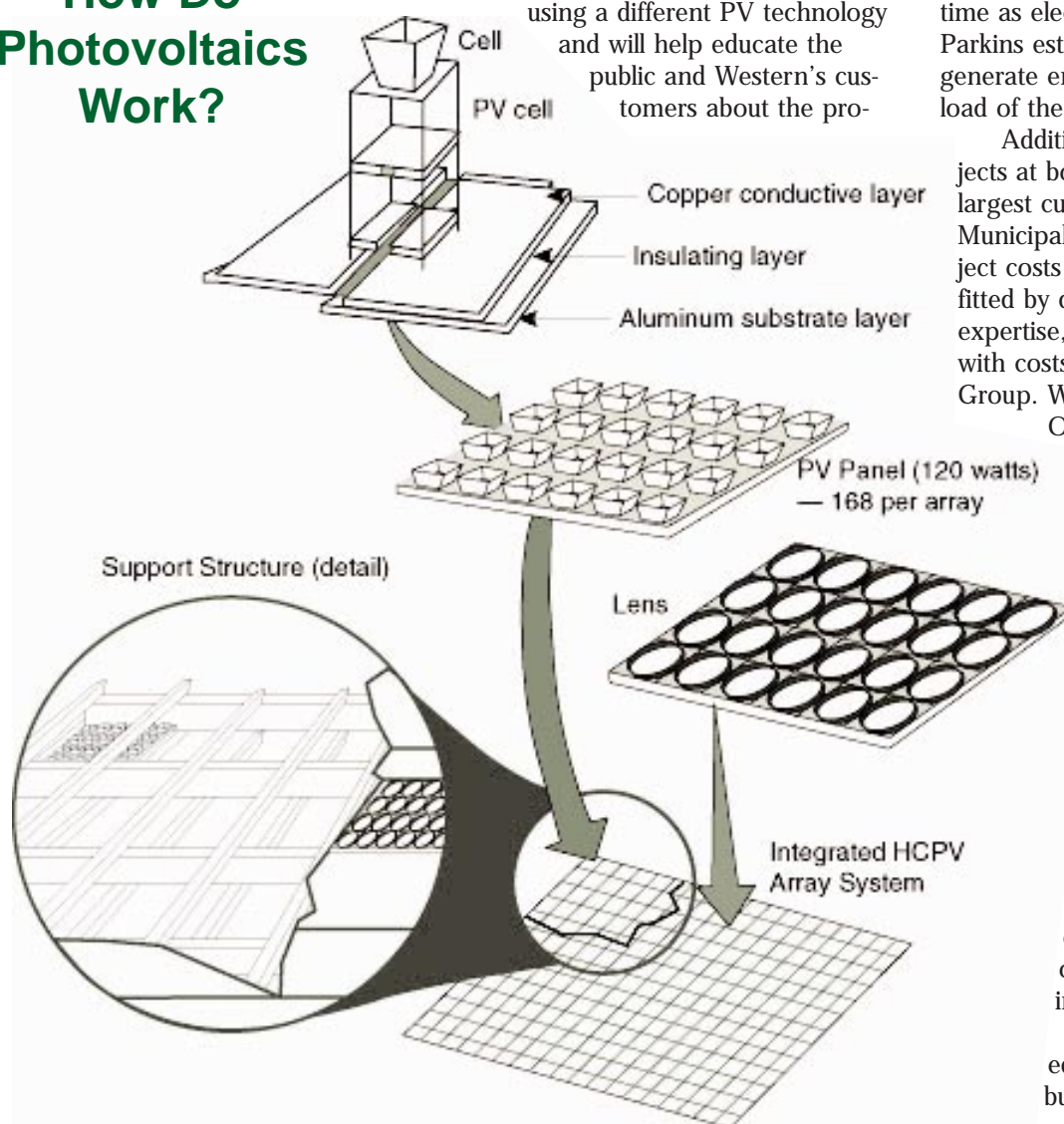
Additionally, SN has used the projects at both facilities to partner with its largest customer, the Sacramento Municipal Utility District, to share project costs and risks. "We have also benefited by drawing on SMUD's solar expertise," Parkins said. Also helping with costs is the Utility Photovoltaic Group. Western's Chief Administrative Officer **Vicki Ponce** serves as

vice president of the group's board of directors.

Why the push to advance this renewable energy source? According to Parkins, there are a number of reasons: to advance President Clinton's "Million Solar Roofs Initiative" in the U.S. by 2010, to follow the 1994 Executive Order 12902 which mandates that Federal agencies cut energy consumption and to comply with the 1992 Energy Policy Act that calls for an increase in the use of non-hydro renewable energy in the United States.

Parkins first became interested in active and passive solar building design in 1980 and is

How Do Photovoltaics Work?



convinced of the environmental benefits of PVs. Over its 20-year life, for example, the 78-kW system at Elverta alone will save 4,700 tons of carbon dioxide that would otherwise be produced by burning fossil fuel, as well as 18 tons of nitrous oxide and 33 tons of sulfur oxide.

While the benefits of solar power are impressive—the sun’s power is constant and reduces our need for oil, gas and coal supplies—Parkins has learned the problems, while few in number, are not insignificant. “The big barrier through the years has been cost. Solar power is still expensive, although as people use it and the production of PV panels increases, the price will drop,” he said.

Another challenge is that the benefits of solar power are realized primarily in areas of the country that get a lot of sunshine, although some energy can be generated even on cloudy days. Although Folsom is currently the only Western facility using PV technology, the program has broad support. “It’s been a team effort,”

Parkins said, adding that **Krishna Shah**, a SN electrical engineer, **Peggy Plate**, RM Energy Services manager and UPVG chairperson and **Randy Manion**, a non-hydro renewable resources manager who serves as Western’s DOE contact on the Million Solar Roofs Initiative, are all actively involved in promoting PV technology.

The planned new CSO building in Lakewood will be designed with solar thermal hot water heating while DSW is considering adding PV panels to its Phoenix office and Yuma Service Center.

Will solar power one day make hydro-electric power obsolete?

“No,” affirmed Parkins. “There will always be a need for hydropower to ensure sufficient energy resources, but as prices drop over the next four or five years, photo voltaics will be a competitive, viable option. I am convinced my children will live in houses in which much of the electricity is generated by PVs.”